

AGE OF EARTH AND EVOLUTION – CAN RELIGION AND SCIENCE RECONCILE?

Muhammad Nabeel Musharraf
Chief Executive, Australian Islamic Library

Nasrullah Kabooro
Assistant Professor, Department of Muslim History, University of Sindh, Jamshoro, Pakistan

Mohammad Ali Leghari
Assistant Professor, Department of Muslim History, University of Sindh, Jamshoro, Pakistan

ABSTRACT:

The debate about the creation of Earth and the beginning of life is often considered one of the main reasons for tensions between the religious and the scientific communities. There is a lack of agreement regarding how the process of creation (or evolution) began and how it moved forward. What do major Abrahamic religions really believe about the creation of Earth and origins of life on it? Is there a difference of viewpoints about these aspects within the religions? Do these viewpoints in contradiction to the scientific theories in full, or are there any commonalities between the two perspectives? Is it possible to offer new interpretations for the religious texts to ensure compatibility with the scientific discoveries? This paper has been written with an aim to explore answers to these questions while referring to the religious scriptures as well as the relevant scientific theories. We have started this discussion with an explanation of the scientific viewpoint of the creation of Earth. It is then followed by an overview of the Jewish, Christian and Islamic perspective. Next, the discussion moves on to the beginning of life on Earth. This aspect is explored from evolutionary as well as creationist point of views. After setting the context and necessary background, we have discussed in detail how these various viewpoints contradict or support each other.

Keywords: Evolution, Creation, Darwin, Earth, Islam, Christianity

INTRODUCTION:

The first thing that is required to be clarified before we begin is that there are a lot of aspects of the early history of the universe and the early stages of life that are based on multiple theories which often compete with, and sometimes contradict, each other. The exact details of how the Earth got formed are still not fully worked out (BBC, 2011). The theories have been revised and modified, as the new discoveries are made, resulting in alternate theories being put forward. Much of what was believed a couple of centuries ago is not believable anymore. More and more scientific facts are being explored and they are leading to new conceptions and interpretations of scientific as well as religious viewpoints. In this paper, we have presented a concise view of only those theories that have been widely accepted and considered more probable as compared to other competing alternatives. The paper is aimed at comparing the scientific and religious viewpoints about the process of creation and analyze if any reconciliation between these apparently contradicting perspectives is possible. The discussion begins with the exploration of the creation of the

universe and then moves on the viewpoints about the beginning of life on Earth according to scientific, Christian, Jewish, and Muslim perspectives.

FORMATION OF EARTH:

In this section, we will first review the scientific narrative. It will be followed by an explanation of the religious narrative.

Scientific Narrative:

One of the most widely accepted hypotheses about the origin of the earth is the big bang theory, which suggests that the universe was formed because of a major explosion 13.8 billion years ago (Ammon, 2001). The universe, since then, is expanding as observed by scientists. Scientists have gathered a number of evidences in support of this theory (Alles, 2013). The results of observations have been extrapolated to the past to opine that the universe originated from an infinitely dense, infinitely tiny, ultra-hot fireball that exploded and over the millennia resulted in the formation of planets and stars including, Earth. There are many relevant questions that are yet to be answered in relation to this explosion (Sutter, 2015). From where did this dense and tiny piece of matter come from and from where did it originate? If it originated from something else, from where did that matter originate? What caused this matter to explode and why it did not explode before? If it exploded because of certain conditions, why did those conditions not get produced earlier? What (or who) else existed before this explosion? There are many such questions which would remain unanswerable from the scientific point of view (Nadis, 2013). From the religious point of view, however, the answer has always been available: it was God's will which determined what will happen and precisely at what moment; everything aligned to what He wished.

Scientifically, the Earth is believed to have come into being approximately 4.5 billion years ago. At that time, its surface was continuously bombarded with meteorites. Intense volcanism existed around the globe. Some scientists believe that the liquid water existed on Earth at that time, despite the conditions on the surface (Williams, 2015). Water vapors condensed as earth's temperature cooled down resulting in the formation of solid crust and oceans on the surface (Williams, 2015). Approximately 4.48 billion years ago, a body of the size equivalent to planet Mars hit the surface of the earth (the phenomenon is known as the "Giant Impact Hypothesis" as explained by Canup & Asphaug, 2001; and Čuk & Stewart, 2012) resulting in melting both the colliding bodies. Due to this collision, a portion of Earth's mantle (which is second of the four layers of earth, as shown in figure 1) was ejected into orbit around the Earth which gradually condensed, and became a spherical body - the moon.

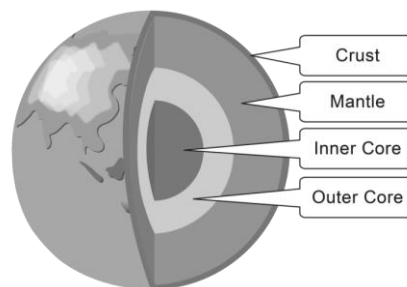


Figure 1: Earth's four layers

The shape and location of the continents on Earth's surface have kept on changing over a period of time. The continents, earlier in the history of Earth, are known to be clumped together in a single landmass called 'supercontinent'. The last of the known supercontinents is called 'Pangaea'.

Pangaea existed about 240 million years ago. By about 200 million years ago, this supercontinent began breaking up. Over millions of years, Pangaea separated into pieces that moved away from one another. These pieces slowly assumed their positions as the continent we recognize today. (Caryl-Sue & Evers, 2015)

The following map clarifies the theorized location of the continents on Pangaea. Locations of the some of the continents are highly intriguing and highlight some interesting neighborhoods, such as India and our homeland, Australia. It is also interesting to note that these land movements have often resulted in extinctions of a number of living species because of the change in living conditions and environment. The movements are still continuing as we write this paper. Could the scientifically theorized movements like this have contributed to the events that we know through the religious scriptures, such as the flood of Noah? A definitive answer to questions like this is not yet available but a possibility certainly exists.



Figure 2: Map of Pangaea with modern continental outlines
(See Attribution 1)

Religious Narrative:

The above narrative specifies the age of the earth as well as the process of its formation. In this section, we will view Christian as well as Muslim viewpoint on the issue in order to

identify how they can (or cannot) reconcile.

Christian and Jewish View point: Various Christian scholars have estimated the age of the earth based on the data available within Bible (ages of key people and nations along with their sequence described in the bible). Dr. John D. Morris, Ph.D. explains that the Christian scholars who have attempted to date the age of Earth have “calculated a span of just a few thousand years, most likely close to 6000 years, since creation” (Morris, 1995a). The largest figure, John explains, “is approximately 15,000 years, but even this seems to stretch the Biblical data too far”. Most of the Christian scholars believe in a ‘young earth, i.e. an Earth which is approximately 6000 years old (Hovind, 2012; Cosner, 2012; Jackson, 2017). In their explanation for the young Earth, the Christian scholars frequently question the accuracy of scientific methods of determining the age of Earth and show mistrust toward their accuracy. Despite the opinions of biblical scholars, many Christians still believe in the old Earth, i.e. the theory that postulates that the Earth came into being millions of years ago. In their defense, they present an alternate understanding of the relevant passages from the Bible (McLatchie, 2011; De Cruz, 2017). This, however, is not considered a correct position in accordance with the biblical system of belief, as explained by numerous Christian scholars. According to Morris (1995b):

Many Christian leaders believe and do a lot of things they shouldn't. But belief in the old earth, with the implied concepts of death before sin, the world before Adam not really "very good," an inconsequential fall and curse, a local flood, etc., destroys the foundation of the gospel of Jesus Christ. Some Christians do believe in both Christianity and the old earth, but this is inconsistent with their professed belief in the Bible.

There are some Biblical narrations which mention about the creation of the earth in six days followed by a day of rest, the Sabbath, analogous with the days of the week. The historical use of this passage among the early priests was in promoting the rest day after six days of work. All adherents were required to follow what the God did. The way the Bible interprets it, the word 'day' means the interval of time between two successive sunrises or sunsets for an inhabitant of the Earth. When defined in this way, the day is conditioned by the rotation of the Earth on its own axis – an opinion supported by various texts and commentaries of the old testament, including the famous works of Jewish scholar Ibn Ezra (James-Griffiths, 2004). Christian and Jewish scholars take the word ‘day’ as a literal 24-hour day. Ham (1987) writes:

The word for “day” in Genesis 1 is the Hebrew word Yom. It can mean either a day (in the ordinary 24-hour day), the daylight portion of an ordinary 24-hour day (i.e., day as distinct from the night), or occasionally it is used in the sense of an indefinite period of time (e.g., “in the time of the Judges” or “In the day of the Lord”). Without exception, in the Hebrew Old Testament, the word Yom never means “period” (i.e., it is never used to refer to a definite long period of time with a specific beginning and end points). The word which means a long period of time in Hebrew is Olam. Furthermore, it is important to note that even when the word Yom is used in the indefinite sense, it is clearly indicated by the context that the literal meaning of the

word “day” is not intended. Some people say the word “day” in Genesis may have been used symbolically and is thus not meant to be taken literally. However, an important point that many fail to consider is that a word can never be symbolic the first time it is used! In fact, a word can only be used symbolically when it has first had a literal meaning.

In his explanation, Ham (1987) analyses a number of other biblical and non-biblical opinions to prove the word ‘day’ in the bible cannot be understood in any other way except as a literal day. This is consistent with the opinions of the majority of Jewish scholars. James-Griffiths (2004) explains that the outcome of his years of study of the Jewish texts indicated that “the days of Genesis were literal.” He further points out, “I could not find any reference to a day (Hebrew *yôm*) in Genesis 1 meaning any more than a literal 24-hour period.”

Islamic View point: Muslims, as proven by science, believe in an old Earth. Though their scripture and the foundational religious texts (e.g. books of hadith) do not specify a definite date, there is information which points out that the Earth used to exist long before the humans.

According to the Islamic viewpoint, the process of creation of Earths and the skies started with the major blast. The Quran says: "...the heavens and the earth were joined together as one unit before We clove them asunder" (21:30). This is consistent with the scientific theory of big bang. Following this big explosion, Allah SWT "...turned to the sky, and it had been (as) smoke. He said to it and to the earth: 'Come together, willingly or unwillingly.' They said: 'We come (together) in willing obedience'" (41:11). "Thus the elements and the matter destined to become the planets and stars began to cool, come together, and form into shape, following the natural laws that Allah established in the universe. The Qur'an further states that Allah created the sun, the moon, and the planets, each with their own individual courses or orbits." (Huda, 2017). It is also mentioned in the Quran that the universe is expanding. Allah SWT says: "The heavens, We have built them with power. And verily, We are expanding it" (51:47). This is also consistent with the scientific explanations about the expansion of the universe (Emspak, 2016) and forms the very basis of the big bang theory.

It is also explained by the Muslims scholars, in the light of their texts, that there were other dwellers on earth before the humans. It is mentioned that God created Earth in six ‘Yaum’. The word Yaum, as used in the Quran, can either mean a literal day or a period of time. This word has been used at various places in the Quran to convey the meaning of ‘a length of time’ (for example, verse 70:4, verse 22:47 etc.). Accordingly, many Muslim scholars explain that the word ‘Yaum’ in the verses related to creation should be understood as a long period of time (Huda, 2017; Hussain, 2008; Syed, 2012). We can accordingly say that from the Islamic perspective, the Earth was created a very long time ago and then it was followed by various developments over a period of time.

LIFE

The beginning of life on earth and the early human life is one of the most debated topics in history. The debate commonly occurs between the 'evolutionists' and the 'creationists'. A brief summary of each of these opinions and beliefs has been explained below.

Evolutionists' point of view:

According to the evolutionary point view, life on earth came about as a result of prevalent conditions on earth and its environment at that time. It was around 3.5 billion years ago that a single cell organism got produced on earth. This remained the most advanced form of living beings on earth for another 3 billion years. Evolutionists believe that it was because of the change in conditions over time, these single cell organisms merged together to form bigger living organisms. Those living organisms started to reproduce and multiply themselves. No decisive explanation is available regarding the intricate details of this process. According to the theories produced by evolutionists, these living beings gradually started to evolve into sea animals, as it was in the sea where they are theorized to be living by that time. The new living beings had more sophisticated features as compared to the earlier forms of life.

With the passage of time, these sea creatures came to know about the possibility of life outside of water and accordingly began to evolve to become the land creatures. It is believed that the presence of an abundance of oxygen led to this advancement and spread of the form of life on earth. Based on this evolutionary process, the sea dwellers transformed into amphibians, insects, reptiles, mammals, and birds, more or less in that order, over the next few hundred million years. Biological evolutionists claim that humans have also evolved from earlier forms of living beings. They present fossils that indicate changes in the shape and form as evidence for their belief. Earliest of such fossils come from Africa where the earlier ancestors of humans, as evolutionists believe, came from. Scientists have theorized that the 15 to 20 different species of humans (or their close ancestors) have lived on Earth in the past. They, however, do not agree on how they relate to each other and what led to the extinction of most of them. They believe that the early humans first migrated out of Africa and gradually spread to rest of the world. The species of modern human are claimed to have evolved and spread much later.

Creationists' point of view:

Creationists believe that the humans did not evolve from an ape-like ancestor; the first human, Adam, was rather created by God Himself Who later on also produced for him a partner so that the two could enjoy each other's company and also reproduce. All human beings are their descendants. According to religious texts, these first humans had the same intellectual faculties and senses as the modern day human beings; they could see, smell, talk, walk, memorize, make informed decisions and learn.

'Creationism', however, is not a uniform set of ideas and beliefs; a variation exists in the views of various religions about the creation of humans and the universe. A brief summary

of views about creation according to Christianity and Islam – two of the biggest religions in the world – is presented below.

Christian and Jewish point of view:

Christian and Jewish scholars explain the following sequence of creation (Isaacs, 1946):

- The First Day: Creation of light
- The Second Day: Creation of the sky
- The Third Day: Earth was put in shape and water was gathered in certain places. The waters formed seas and oceans, lakes and rivers; so that in other parts, the dry land became visible. Plant, grass, and trees also came into being on this day.
- The Fourth Day: The Sun, the Moon, and the Stars were created.
- The Fifth Day: Seas were filled with fishes and other water animals. Birds were also created on this day.
- The Sixth Day: All the other animals were created on this day. It was also the day when the first human, Adam, was created.
- The Seventh Day: God rested on the seventh day

Adam and Eve were the earliest human beings. Adam was created when God took some soil and breathed life into it. All the current human beings are direct descendants of Adam.

Islamic point of view:

Islamic belief shares some commonalities with the orthodox Christian and orthodox Jewish views about the process of creation; however, some significant differences exist between them. According to Islamic belief, just like Christianity, Adam was the first human being. God taught him names of various things which he could say in front of the angels. All present human being, according to Islamic perspective like other Abrahamic faiths, are children of Adam.

It is also known from the Islamic religious texts, including hadith and the Tafseer, that there were other living beings that dwelled on the surface of the earth before the man. The Quran, as explained before, stipulates the process of first creation took place in six days. “While the Qur’ān asserts a creation in six days (like the Hebrew Bible), “day” is often interpreted as a very long span of time, rather than a 24-hour period” (De Cruz, 2017).

CAN THE EVOLUTIONIST AND CREATIONIST VIEWS EVER RECONCILE?

The theory of evolution is one of the most contest and debated theory. Availability of only a limited fossils evidence, break in the fossil records (missing stages of evolution), and common contradictions with logic are some of the main reasons this theory is doubted this much. Some of the intricate details of the theory are questionable too, such as the process of ‘adaptation’; it is clearly seen that the process of adaptation was not seen in the early living beings for millions of years while they, accordingly to the theory, could have adapted to the conditions they were living in, i.e. lack of oxygen. It was not until the conditions changed that the growth became possible. Numerous other examples can be presented

where these aspects are questionable. Similarly, owing to the missing fossils records, many scientists propose 'punctuated equilibrium' theory. These scientists believe that the degree of gradualism¹ commonly attributed to Charles Darwin is virtually nonexistent in the fossil record and that stasis dominates the history of most fossil species. According to this theory of evolution, there are very long periods of times in which there are no changes in species (as fossil records do not indicate the gradual change hypothesized by Darwin's gradualism). The scientists who propose punctuated equilibrium theory, still believe that species do change and accordingly there has to be time or a period when it happens. Punctuated equilibrium asserts these changes in species occur over a short period of time which "punctuates" the long periods of equilibrium in which no change happens (Scoville, 2017). This, as obvious, is also prone to a lot of 'why' questions which cannot all be answered. The aim of this theory was to close the question of 'missing links' in the fossil records in terms of evolutionary process. This theory, however, is not free of doubtfulness.

Our scope of this paper, however, is to see whether the religious views reconcile with the theory of evolution or not (and not if the theory itself is correct or not). We will accordingly discuss various aspects of the evolutionary process and see how they reconcile. It should be noted that the contradiction between religious views and the theory of evolution occurs in certain aspects of the theory; in some aspects, there is no disagreement as evident from the discussion below. For example, in terms of DNA transfer, DNA mutation (within species), there is no disagreement. This accounts for the variation we see in the species around us. However, there are certain aspects of the theory of evolution (such speciation, i.e. formation of new species) are a hot topic – at least in case of human evolution. A number of theologians, past as well as the present, have accepted certain aspects of the evolutionary process or tried to reconcile their faith with this theory (Khan, 2013; Radeska, 2016). This concept, along with the hypothesis that the earlier humans came from Africa and that the living beings evolve in response to the conditions they face, can be seen in the works of some of the Muslim scholars of classical age approximately 600 years before Darwin (Radeska, 2016); this, however, does not represent the orthodox opinion. Following is a more elaborate explanation:

Age of Earth: Regarding the age of Earth, there is no contrast in the Islamic opinion and that proven by science. The verses that inform about the creation over a period of time and those that support the theories, such as 'big bang', seem to indicate that there is no difference between the commonly held scientific beliefs and the religious views in these cases. However, the reconciliation of the orthodox or tradition Biblical view about the young age of Earth cannot reconcile with the scientific estimations about the age of Earth.

Creation of Human Beings: Regarding the creation of humans, the generally accepted view of the Muslims, as well as Christians, is that God created the human beings in fully formed shape with all their specific characteristics and abilities (such as seeing, smelling, talking, memorizing, walking on feet, having emotions and other aspects). Muslims believe in

¹ "Gradualism is the idea that large changes are actually the culmination very small changes that build up over time." (Scoville, 2017)

evolution within the species, but they believe that the human being cannot have evolved from any other species and was a special creation of God that He specifically blessed (Abdalla, 2013). There are some indications in a hadith, though there is a debate about their true meaning, which suggests of some evolution within the human beings. We come to know from the hadith literature that the heights of earlier humans used to be much larger than today's human beings. It reduced gradually over the period of time. According to the common interpretation of such narrations, it seems that Islam is not opposed to evolution in certain features of human beings, but within certain limits. However, there are differing opinions about the correct meaning of this hadith and if it can be considered as talking about the height of humans on earth or not.

Evolution within and from species: According to Orthodox Jewish and Christian viewpoints, the creation of various forms of life on Earth took place of their respective 24-hours creation day. This leaves no room for any possibility of evolution in any species. However, from the Muslim perspective, there is a room available in terms of species other than the human beings. The fundamental factor that affects the reconciliatory process and discussion, in my opinion, is the belief about the presence or absence of God. Those who believe in the presence of a supreme being, God, can argue that other forms of life (including those species that are believed to be of close relations to human beings in terms of their shapes or genes) could have evolved over a period of time, as God willed and as He guide them to be. Most of the Muslim theologians are not much interested in arguing this possibility of evolution. However, if anyone claims that the humans have 'definitely' evolved from ape-like ancestors; it raises a number of scientific and logical questions – many of which can never be answered. On the other hand, if one believes in God and believes in His powers, he can say that even if the process of evolution was happening, God was fully capable of producing a creation, human, outside of this cycle. It would not be a surprise for him if he finds this creation to have some similar features to the more developed form of species at the time when God created it. If it has got similarities with something, it cannot be claimed that it evolved from them. Let us view this from a logical perspective. One of the walls in my house is very similar in its shape and appearance to a wall in my office; I would be mad to say that as these walls are similar, one of them has evolved from the other. It is rather the style of those who make such walls and they make them with certain common features. Those who make these walls sometimes make very simple walls, and sometimes they make them in highly complex forms. It can accordingly be argued that though the human appears similar to some other species in its shape and features, it does not automatically mean that it evolved from them. God was, and is, fully capable of producing anything outside of the chain (irrespective of whether the concept of the chain is true or not). In a conference on the reconciliation between the theory of evolution and Islamic perspective, Dr. Yasir Qadhi, a renowned Islamic theologian said that he does not disprove any of the aspects of the theory of evolution, except where it applies to humans.

He conceded that the "maximum we can go" from an Islamic theological perspective is to say that God inserted Adam in the natural order. To explain his position, he used the example of dominos. He asserted that Adam was the last domino placed directly by God. From his perspective, believers would see this last domino as a miracle of

God, whereas non-believers would see a causal connection from all the other dominos. This way, the miracle of Adam is preserved theologically. (Hameed, 2013)

CONCLUSION:

From the scientific perspective, as Fatimah Jackson – a professor of biological anthropology at the University of North Carolina points out, it is important to understand that science only tells us "how" things happen, and not "why" (Hameed, 2013). The religious people believe that even if the process of evolution is accepted, God is fully capable of creating the human amidst the evolutionary cycles happening around, as the Creator willed. Though most of the Islamic theological viewpoints about the creation of the world and the spread of life on Earth (barring the creation of first human being), there is a limited overlap between the traditional Jewish and Christian interpretations and the modern scientific explanations. Many adherents of these faiths have accordingly expressed a need for reinterpretation of their religious texts.

REFERENCES:

- Abdalla, M. (2013). *Evolution was an Islamic Theory Before Darwin (Mohammedan Theory of Evolution)*. Australia: ABC News. Retrieved from <https://www.youtube.com/watch?v=D97wYS2bbPc>
- Alles, D. L. (2013). The Evolution of the Universe. Western Washington University. Retrieved from http://fire.biol.wvu.edu/trent/alles/Cosmic_Evolution.pdf
- Ammon, C. (2001). Earth's Origin. The Pennsylvania State University. Retrieved from http://eqseis.geosc.psu.edu/~cammon/HTML/Classes/IntroQuakes/Notes/earth_origin_lecture.html
- BBC. (2011). The Earth formed from a vast gas and dust cloud. Retrieved from http://www.bbc.co.uk/science/earth/earth_timeline/earth_formed
- Canup, R. M., & Asphaug, E. (2001). Origin of the Moon in a giant impact near the end of the Earth's formation. *Nature*, 412(6848), 708.
- Caryl-Sue, & Evers, J. (2015). Continental Drift. *National Geographic*. Retrieved from <https://www.nationalgeographic.org/encyclopedia/continental-drift/>
- Cosner, L. (2012). How does the Bible teach 6,000 years? *Creation*. Retrieved from <http://creation.com/6000-years>
- Ćuk, M., & Stewart, S. T. (2012). Making the Moon from a fast-spinning Earth: a giant impact followed by resonant despinning. *Science*, 338(6110), 1047–1052.
- De Cruz, H. (2017). Religion and Science. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Spring 2017). Metaphysics Research Lab, Stanford University. Retrieved from <https://plato.stanford.edu/archives/spr2017/entries/religion-science/>

- Emspak, J. (2016). Does the Universe Have an Edge? *Live Science*. Retrieved from <https://www.livescience.com/33646-universe-edge.html>
- Hameed, S. (2013, January 11). Muslim thought on evolution takes a step forward. Retrieved August 22, 2017, from <http://www.theguardian.com/commentisfree/belief/2013/jan/11/muslim-thought-on-evolution-debate>
- Ham, K. (1987). Why Did God Take Six Days? *Answers in Genesis*. Retrieved from <https://answersingenesis.org/days-of-creation/why-did-god-take-six-days/>
- Hovind, E. (2012). Biblical Age of the Earth | Creation Today. *Creation Today*. Retrieved from <http://creationtoday.org/biblical-age-of-the-earth/>
- Huda. (2017). What Islam Believes About the Creation of the Universe. *ThoughtCo*. Retrieved from <https://www.thoughtco.com/creation-of-the-universe-2004201>
- Hussain, I. (2008). Six Days of Creation (Quran Sura 11 verse 7). *Islam from Inside*. Retrieved from [http://www.islamfrominside.com/Pages/Tafsir/Tafsir\(11-7\)Six_days_of_creation.html](http://www.islamfrominside.com/Pages/Tafsir/Tafsir(11-7)Six_days_of_creation.html)
- Isaacs, J. (1946). Creation of the World. *Chabad, Kehot Publication Society*. Retrieved from http://www.chabad.org/library/article_cdo/aid/246605/jewish/Creation-of-the-World.htm
- Jackson, W. (2017). How Old Is the Earth? *Christian Courier*. Retrieved from <https://www.christiancourier.com/articles/7-how-old-is-the-earth>
- James-Griffiths, P. (2004). Creation days and Orthodox Jewish tradition - creation.com. *Creation Magazine*, 26(2), 53–55.
- Khan, Y. (2013, January 9). Muslims engage in quest to understand evolution. *The Guardian*. Retrieved from <http://www.theguardian.com/science/blog/2013/jan/09/muslims-quest-to-understand-evolution>
- McLatchie, J. (2011, October 27). Why I Reject A Young Earth View: A Biblical Defense of an Old Earth | Frank Turek | Christian Apologetics | Christian Apologetics Speakers. *Cross Examined - Christian Apologetic Ministry*. Retrieved from <http://crossexamined.org/why-i-reject-a-young-earth-view-a-biblical-defense-of-an-old-earth/>
- Morris, J. D. (1995a). How Old Is The Earth According To The Bible? Institute of Creations Research. Retrieved from <http://www.icr.org/article/how-old-earth-according-bible/>
- Morris, J. D. (1995b). Is Belief in the Young Earth Necessary to Be a Christian? *Institute of Creations Research*. Retrieved from <https://www.icr.org/article/1138/>

- Nadis, S. (2013). What Came Before the Big Bang? *Discover Magazine*. Retrieved from <http://discovermagazine.com/2013/september/13-starting-point>
- Radeska, T. (2016). The first theory of evolution is 600 years older than Darwin. *The Vintage News*. Retrieved from <https://www.thevintagenews.com/2016/08/27/priority-first-theory-evolution-600-years-older-darwin/>
- Scoville, H. (2017). Gradualism vs. Punctuated Equilibrium. *ThoughtCo*. Retrieved from <https://www.thoughtco.com/gradualism-vs-punctuated-equilibrium-1224811>
- Sutter, P. (2015). What Triggered the Big Bang? It's Complicated. *SPACE*. Retrieved from <https://www.space.com/31192-what-triggered-the-big-bang.html>
- Syed, I. B. (2012). SIX DAYS OF CREATION. Islamic Research Foundation International, Inc. Retrieved from http://www.irfi.org/articles/articles_101_150/six_days_of_creation.htm
- Williams, M. (2015). Solar System History: How Was the Earth Formed? *Universe Today*. Retrieved from <https://www.universetoday.com/76509/how-was-the-earth-formed/>